

### **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1. (currently amended) A method for growing a mono-crystalline emitter for a bipolar transistor, comprising:
  - providing a trench formed on a silicon substrate having opposed silicon oxide side walls;
  - selectively growing a highly doped first mono-crystalline layer on the silicon substrate in the trench; and
  - non-selectively growing a second silicon layer over the trench in order to form an amorphous or polysilicon layer over the silicon oxide sidewalls and a second mono-crystalline layer over the first mono-crystalline layer.
2. (currently amended) The method of claim 1, wherein the step of selectively growing a highly doped first mono-crystalline layer is accomplished using selective epitaxial growth.
3. (original) The method of claim 2, wherein the selective epitaxial growth using a precursor selected from the group consisting of:  $\text{SiH}_2\text{Cl}_2$ ,  $\text{SiH}_4$ ,  $\text{SiCl}_4$ ,  $\text{SiCl}_3$ ,  $\text{Si}_2\text{H}_6$ ,  $\text{Si}_3\text{H}_8$ ,  $\text{GeH}_4$ , and  $\text{SiH}_3\text{CH}_3$ .
4. (previously presented) The method of claim 1, wherein the step of non-selectively growing the second silicon layer is accomplished using differential epitaxial growth.
5. (currently amended) The method of claim 1, wherein the first mono-crystalline layer is substantially grown only on an active area on the silicon substrate.
6. (original) The method of claim 1, comprising the further step of performing a salicidation process using a silicide selected from the group consisting of: titanium,

cobalt and nickel.

7. (currently amended) The method of claim 1, wherein the first mono-crystalline emitter is n-type[[d]] doped with an element selected from the group consisting of: phosphorous and arsenic

8. (currently amended) A method for forming a highly n-type doped layer in a semiconductor wafer, comprising:

- providing a first active region comprised of a silicon substrate;
- providing a second region comprised of silicon oxide;
- selectively growing a highly doped mono-crystalline layer on the silicon substrate; and
- non-selectively growing a second silicon layer over the silicon substrate and silicon oxide to form a second mono-crystalline layer over the silicon substrate and an amorphous or polysilicon layer over the silicon oxide.

9. (currently amended) The method of claim 8, wherein the step of selectively growing a highly doped first mono-crystalline layer is accomplished using selective epitaxial growth.

10. (original) The method of claim 8, wherein the selective epitaxial growth uses a precursor selected from the group consisting of:  $\text{SiH}_2\text{Cl}_2$  and  $\text{SiH}_4$ ,  $\text{SiCl}_4$ ,  $\text{SiCl}_3$ ,  $\text{Si}_2\text{H}_6$ ,  $\text{Si}_3\text{H}_8$ ,  $\text{GeH}_4$ , and  $\text{SiH}_3\text{CH}_3$ ..

11. (original) The method of claim 8, wherein the step of non-selectively growing the second silicon layer is accomplished using differential epitaxial growth.

12. (currently amended) The method of claim 8, wherein the first mono-crystalline layer is substantially grown only on the active region.

13. (original) The method of claim 8, comprising the further step of performing a salicidation process using a silicide selected from the group consisting of: titanium, cobalt and nickel.

14. (previously presented) The method of claim 8, wherein the highly n-type doped layer is doped with an element selected from the group consisting of: phosphorous and arsenic.

15. (currently amended) A method for growing a mono-crystalline emitter for a bipolar transistor, comprising:

providing a trench formed on a substrate having opposed silicon oxide side walls;[[,]]

growing a highly doped layer on the substrate in the trench using selective epitaxial growth; and

growing a second layer over the trench using differential epitaxial growth in order to form an amorphous or polysilicon layer over the silicon oxide sidewalls and a mono-crystalline layer over the highly doped layer.

16. (original) The method of claim 15, wherein the selective epitaxial growth using a precursor selected from the group consisting of:  $\text{SiH}_2\text{Cl}_2$ ,  $\text{SiH}_4$ ,  $\text{SiCl}_4$ ,  $\text{SiCl}_3$ ,  $\text{Si}_2\text{H}_6$ ,  $\text{Si}_3\text{H}_8$ ,  $\text{GeH}_4$ , and  $\text{SiH}_3\text{CH}_3$ .

17. (original) The method of claim 15, wherein the highly doped layer comprises a mono-crystalline layer that is substantially grown only on an active area on the substrate.

18. (original) The method of claim 15, comprising the further step of performing a salicidation process using a silicide selected from the group consisting of: titanium, cobalt and nickel.

19. (currently amended) The method of claim 15, wherein the mono-crystalline emitter is n-type[[d]] doped with an element selected from the group consisting of: phosphorous and arsenic.

20. (currently amended) The method of claim 15, wherein the mono-crystalline emitter is p-type[[d]] doped using boron.